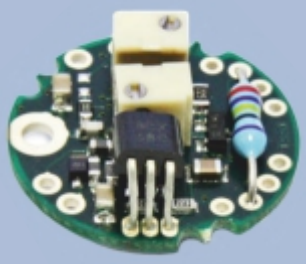
TYPE: ICA

A United Kingdom company

ICA 'In-Cell' Analogue Strain Gauge Amplifier



Features

- Standardised mounting hole for faster and easier installation
- Standardised excitation of 5V DC
- Full CE approval
- Plated through holes for wire connections
- Maximum height 7.6mm
- Cost effective with attractive discounts on quantity orders
- Robust design, reverse short circuit protected
- Fast calibration procedure
- Can be integrated into the majority of LCM Systems sensor products

Typical Applications

- Internal amplification of strain gauge based pressure transducers
- Internal amplification of strain gauge based load cells
- Internal amplification of strain gauge based torque transducers

Description

The second generation ICA (in cell amplifier) is an extremely high performance strain gauge amplifier, converting a strain gauge input to a voltage or current output.

Its sub-miniature design enables it to be fitted into the majority of transducers, for a wide range of signal conditioning for strain gauges, load cells, pressure and torque transducers.

The amplifier is available in six versions, offering a wide range of current and voltage outputs. All amplifiers have a wide operating voltage range.

Specification - Voltage Output Versions

ICA1 (0.1-10.1 volts) & ICA2 (0.1 - 5.1 volts) 3 Wire	
Power supply	ICA1: 13 to 28V DC, ICA2: 8.5 to 28V DC
Operating current	22mA (note 1)
Operating temperature range	-40 to +85ºC
Storage temperature range	-40 to +85ºC
Reverse polarity protection	-30V
Bridge excitation	4.9 to 5.1V
Bridge resistance	350 to 5000Ω (1000Ω typical)
Bridge sensitivity	0.5 to 150mV/V (2.5mV/V typical) (note 2)
Output voltage range	ICA1: +0.1 to +10.1V, ICA2: +0.1 to +5.1V
Output load	5000Ω
Band width	dc to 1000Hz
Zero adjustment	±2%FR
Span adjustment	±8%FR
Linearity	0.02%FR
Zero temp stability	0.0015±%FR/ºC
Span temp stability	0.0051±%FR/ºC

ICA3 (±10 volts) 4 Wire & ICA 6 (±10 volts) 3 Wire	
Power supply	ICA3: ±13 to ±15V DC, ICA6: 14 to 18V DC (note3)
Operating current	ICA3: 22mA, ICA6: 30mA (note 1)
Operating temperature range	-40 to +85ºC
Storage temperature range	-40 to +85ºC
Reverse polarity protection	-30V
Bridge excitation	4.9 to 5.1V
Bridge resistance	350 to 5000Ω (1000Ω typical)
Bridge sensitivity	0.5 to 150mV/V (2.5mV/V typical) (note 2)
Output voltage range	-10v to +10V
Output load	5000Ω
Band width	dc to 1000Hz
Zero adjustment	±2%FR
Span adjustment	±8%FR
Linearity	0.02%FR
Zero temp stability	0.0015±%FR/ºC
Span temp stability	0.0051±%FR/ºC

Notes

The voltage between either of the power supply connections and the load cell shield should not exceed 50V. Any leakage will be greater than 10M Ω. FR = full range.

Note 1 With 350Ω load cell connected
Note 2 Factory setting is the typical value shown. For other values fit an alternative calibration resistor
Note 3 ICA6 maximum voltage can be increased to 24V with 1000Ω load cell

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Specification - Current Output Versions

ICA4 (4-20mA) 3 Wire	
Power supply	13 to 28V DC (24V DC typical) (note 1)
Operating current	26 to 42mA
Operating temperature range	-40 to +85°C
Storage temperature range	-40 to +85°C
Reverse polarity protection	-30V
Bridge excitation	4.9 to 5.1V (note 3)
Bridge resistance	350 to 5000Ω (350Ω typical)
Bridge sensitivity	0.5 to 150mV/V (2.5mV/V typical) (note 2)
Output voltage range	4 to 20mA
Output load	1000Ω (note 3)
Band width	dc to 1000Hz
Zero adjustment	±2%FR
Span adjustment	±8%FR
Linearity	0.02%FR
Zero temp stability	0.0015±%FR/°C
Span temp stability	0.0051±%FR/°C

ICA5 (4-20mA) 2 Wire	
Power supply	7.5 to 28V DC (24V DC typical)
Operating current	4 to 20mA
Operating temperature range	-40 to +85°C
Storage temperature range	-40 to +85°C
Reverse polarity protection	-30V
Bridge excitation	1.05 to 1.16V (1.11 typical) (note 4)
Bridge resistance	350 to 5000Ω (1000Ω typical) (note 5)
Bridge sensitivity	0.5 to 55mV/V (2.5mV/V typical) (note 2)
Output voltage range	4 to 20mA
Output load	825Ω with 24V supply
Band width	dc to 1000Hz
Zero adjustment	±2%FR (note 4)
Span adjustment	±8%FR
Linearity	0.02%FR
Zero temp stability	0.005±%FR/°C
Span temp stability	0.014±%FR/°C

Notes

The voltage between either of the power supply connections and the load cell shield should not exceed 50V. Any leakage will be greater than 10M Ω. FR = full range.

Note 1 The ICA4 can tolerate a lower power supply voltage if the output load is reduced e.g. operation is possible at 8V provided that the load does not exceed 150Ω.

Note 2 Factory setting is the typical value shown. For other values fit an alternative calibration resistor

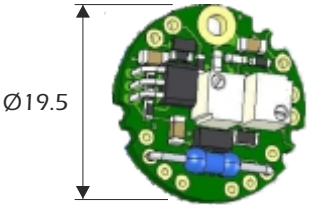
Note 3 24V minimum supply/sink mode

Note 4 With 1000Ω load cell connected

Note 5 Recommend bridge impedance is 1000Ω or greater

All dimensions are in mm

Dimensions



www.lcmsystems.com

LCM Systems Ltd
Unit 15, Newport Business Park, Barry Way
Newport, Isle of Wight PO30 5GY UK
Tel: +44 (0)1983 249264
sales@lcmsystems.com
www.lcmsystems.com

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